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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/592,310	06/13/2000	Upendra V. Chaudhari	YOR-2000-0167US1	7377

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FERENCE & ASSOCIATES
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EXAMINER	
LAFORGIA, CHRISTIAN A	
ART UNIT	**PAPER NUMBER**
2131	

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/592,310	CHAUDHARI ET AL.	
	Examiner	Art Unit	
	Christian La Forgia	2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-10 and 12-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-10 and 12-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 28 November 2005 has been entered.

2. Claims 1, 3-10, and 12-19 have been presented for examination.

3. Claims 2 and 11 have been cancelled as per Applicant's request.

Response to Arguments

4. Applicant's arguments filed 28 November 2005 have been fully considered but they are not persuasive.

5. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies, such as the discriminant for the background class is preferably a target-dependent function of individual voiceprint-based discriminants in the background population, which individual discriminants are inherent in background population models, are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. As per the Applicant's argument that the cited reference fails to disclose a background discriminant constructed by applying a pre-determined "profile" to a population of background models, the Examiner disagrees. As taught by Parthasarathy in column 5, lines 3-45, the model

is compared against all of the stored models, and the system chooses the best five identities. Therefore, it is held that Parthasarathy discloses a background discriminant constructed by applying a pre-determined "profile" to a population of background models.

7. See further rejections that follow.

Claim Rejections

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1, 3-10, and 12-19 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,913,192 to Parthasarathy et al., hereinafter Parthasarathy.

10. As per claims 1, 9, 10, 18, and 19, Parthasarathy teaches a method of providing authentication, said method comprising the steps of:

receiving an identity claim (column 4, lines 47-53, i.e. "In operation, an unknown user seeks to gain access to something for which his identity ought to be verified");

determining a target discriminant based on the identity claim and on at least one target model relating to a target individual (column 4, line 53 to column 5, line 17, i.e. "The speaker-independent phrase recognizer **22** recognizes the password phrase by matching the utterance against all the phonetic transcriptions in the lexicon database memory **16**, and generates a score phrase of each enrolled user represented by phonetic transcriptions in the lexicon database memory **16**." and "The speaker-independent phrase recognizer **22** selects the N best sets of phonetic transcriptions, each set corresponding to the password phrase selected by a speaker, from the sets of phonetic transcriptions in the pre-existing lexicon provided by the lexicon database memory **16**.");

determining a background discriminant based on the identity claim and on at least one background model relating to at least one background individual, wherein said step of determining the background discriminant comprises providing a background profile and further determining the background discriminant based on the background profile (column 3, lines 35 to column 4, line 19; column 5, lines 17-30, i.e. "The speaker-dependent phrase recognizer **24** scores the cepstral plus delta cepstral features characterizing the sentence-long password utterance against each of the N speaker dependent whole-phrase HMMs [hidden Markov models] obtained from the HMM database memory **18** to generate a speaker-dependent score for each of the N best possible identities");

determining a score based on the target discriminant and the background discriminant (column 5, lines 31-45, i.e. "For each of the N best possible identities, the score processor **26** sums the speaker-independent score and the speaker-dependent score to determine a combined score, which is appropriate since the generated scores are estimated log likelihood"); and accepting or rejecting the identity claim based on the determined score (column 5, lines 40-61, i.e. "The verification score is compared to a verification threshold stored in the verification database memory **30**. If the verification score is above the verification threshold, then the putative identity is authenticated and allowed access to the system or service.").

11. Regarding claims 3 and 12, Parthasarathy teaches wherein said step of providing a background profile comprises

determining a permutation matrix (Figure 2 [block 18], column 4, lines 7-46);

determining a weight vector (column 3, lines 35-60);

determining the background profile based on the permutation matrix and the weight vector (column 5, lines 17-30, i.e. "The speaker-dependent phrase recognizer **24** scores the cepstral plus delta cepstral features characterizing the sentence-long password utterance against each of the N speaker dependent whole-phrase HMMs [hidden Markov models] obtained from the HMM database memory **18** to generate a speaker-dependent score for each of the N best possible identities").

12. With regards to claims 4 and 13, Parthasarathy teaches wherein said step of determining the weight vector comprises selecting a weight graph that relates the individual background discriminant functions to at least one characteristic associated with the at least one target voiceprint model (column 3, lines 35-60).

13. With regards to claims 5 and 14, Parthasarathy teaches wherein said step of providing the background profile comprises providing the background profile automatically (column 5, lines 17-30).

14. Concerning claims 6 and 15, Parthasarathy teaches wherein said step of determining the permutation matrix comprises providing the permutation matrix as the identity matrix (Figure 2 [block 18], column 4, lines 7-46).

15. Regarding claims 7 and 16, Parthasarathy teaches providing a plurality of background population models (column 5, lines 17-30, i.e. "Based on the N best possible identities, the

speaker-dependent phrase recognizer **24** retrieves the speaker-dependent whole-phrase HMM that corresponds to each of those N best possible identities from the HMM database memory **18**");

ascertaining individual discriminants in correspondence with each of the background population models (column 5, lines 17-30, i.e. "The speaker-dependent phrase recognizer **24** scores the cepstral plus delta cepstral features characterizing the sentence-long password utterance against each of the N speaker dependent whole-phrase HMMs [hidden Markov models] obtained from the HMM database memory **18** to generate a speaker-dependent score for each of the N best possible identities"); and

said step of determining the background discriminant comprising determining the background discriminant as a function of the individual discriminants (column 5, lines 17-30, i.e. "The speaker-dependent phrase recognizer **24** scores the cepstral plus delta cepstral features characterizing the sentence-long password utterance against each of the N speaker dependent whole-phrase HMMs [hidden Markov models] obtained from the HMM database memory **18** to generate a speaker-dependent score for each of the N best possible identities").

16. With regards to claims 8 and 17, Parthasarathy teaches wherein said step of determining the background discriminant comprises determining the background discriminant as a function, of the individual discriminants corresponding to each of the background population models, that is dependent on at least one characteristic relating to the target individual (column 3, lines 35 to column 4, line 19; column 5, lines 17-30).

17. Claims 1, 3-10, and 12-19 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,223,555 to Parthasarathy et al., hereinafter Parthasarathy2.

18. As per claims 1, 9, 10, 18, and 19, Parthasarathy2 teaches a method of providing authentication, said method comprising the steps of:

receiving an identity claim (Figure 12 [block 1210], column 1, lines 14-16, column 6, line 59 to column 7, line 5, i.e. determining the identity of a speaker);

determining a target discriminant based on the identity claim and on at least one target model relating to a target individual (Figure 12 [block 1220], column 1, lines 37-64, column 6, line 59 to column 7, line 5, i.e. a first set of feature vectors are computed based on the received utterance, first set of feature vectors are extracted from each password utterance and the phone boundaries from each phone);

determining a background discriminant based on the identity claim and on at least one background model relating to at least one background individual, wherein said step of determining the background discriminant comprises providing a background profile and further determining the background discriminant based on the background profile (Figure 12 [block 1230], column 1, lines 37-64, column 6, line 59 to column 7, line 5, i.e. using the feature vectors from the password utterances of all of the speakers in the group, transformation parameters and transformed models are generated for each phone and speaker, using mixture discriminant analysis);

determining a score based on the target discriminant and the background discriminant (Figure 12 [block 1240], column 1, lines 44-46, column 6, line 59 to column 7, line 5, i.e. the scores are combined to determine a score); and

accepting or rejecting the identity claim based on the determined score (Figure 12 [block 1250], column 1, lines 44-46, column 6, line 59 to column 7, line 5, i.e. identity is validated based on the score).

19. Regarding claims 3 and 12, Parthasarathy2 teaches wherein said step of providing a background profile comprises determining a permutation matrix; determining a weight vector; determining the background profile based on the permutation matrix and the weight vector (Figures 6 [block 620], 11 [block 1160], column 4, line 19 to column 5, line 8, column 6, lines 56-58).

20. With regards to claims 4 and 13, Parthasarathy2 teaches wherein said step of determining the weight vector comprises selecting a weight graph that relates the individual background discriminant functions to at least one characteristic associated with the at least one target voiceprint model (column 4, line 19 to column 5, line 43).

21. With regards to claims 5 and 14, Parthasarathy2 teaches wherein said step of providing the background profile comprises providing the background profile automatically (Figures 6 [block 620], 11 [block 1160], column 4, line 19 to column 5, line 8, column 6, lines 56-58).

22. Concerning claims 6 and 15, Parthasarathy2 teaches wherein said step of determining the permutation matrix comprises providing the permutation matrix as the identity matrix (Figures 7, 8, 9, column 5, line 9 to column 6, line 19).

23. Regarding claims 7 and 16, Parthasarathy2 teaches providing a plurality of background population models; ascertaining individual discriminants in correspondence with each of the background population models; and said step of determining the background discriminant comprising determining the background discriminant as a function of the individual discriminants (Figures 6, 7, 8, 9, 11 [block 1160], column 4, lines 19-48, column 5, line 9 to column 6, line 19, column 6, line 50-58).

24. With regards to claims 8 and 17, Parthasarathy2 teaches wherein said step of determining the background discriminant comprises determining the background discriminant as a function, of the individual discriminants corresponding to each of the background population models, that is dependent on at least one characteristic relating to the target individual (column 4, line 19 to column 5, line 8).

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

26. The following patents are cited to further show the state of the art with respect to voiceprint analysis, such as:

United States Patent No. 6,792,083 to Dams et al., which is cited to show activating a voice-controlled function in a multi-station network through using both speaker-dependent and speaker-independent speech recognition.

United States Patent No. 6,356,868 to Yuschik et al., which is cited to show a voiceprint identification system.

United States Patent No. 6,330,536 to Parthasarathy et al., which is cited to show speaker identification using mixture discriminant analysis to develop speaker models.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian La Forgia whose telephone number is (571) 272-3792. The examiner can normally be reached on Monday thru Thursday 7-5.

28. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

29. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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2/21/06